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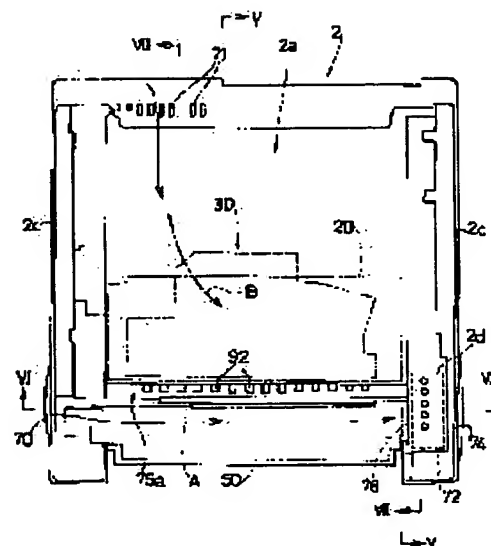
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(54) COOLING DEVICE FOR IMAGE FORMING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To improve the performance for cooling a heat source such as fixing unit with one cooling fan, and to reduce ht production cost, by utilizing the structure of the main body case of a printer.

SOLUTION: An upper surface plate part 76a for a ventilating duct horizontally intersecting a main body case 2 so that a processing unit 20 may be separated from the fixing unit 30 thermally fixing a toner image transferred to paper is formed in a state where is cross section ids nearly inverted V-shaped and integrally and successively provided at a part near to the front part of the main frame part 2a of the main body case 2. By driving the cooling fan 72 in a cooling fan housing part, air sucked from a 1st air inflow port 70 on one side of the main body case 2 is discharged to the outside of the device from an air outflow port 74 on the other side of the main body case 2 through the cooling fan housing part from a transverse aperture 78 along the upper surface of the fixing unit 50. The air is sucked also from a 2nd air outflow port 71 on the back surface of the main body case 2, made to pass the upper and the lower surfaces of the processing unit 20 and drawn in the aperture 78.



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CLAIMS

[Claim(s)]

[Claim 1] The process unit which has the developer which forms a toner image in the photo conductor with which an electrostatic latent image is formed at least, and this photo conductor, In the image formation equipment which comes to hold the exposure unit for forming a latent image in a photo conductor, the fixing unit which carries out heating fixing of the toner image imprinted by the form, a power supply section, and various substrates in a main part case Even if there are few aforementioned main part cases, an airstream entrance is formed in an unilateral, an airstream outlet is formed in a side besides a main part case, and the stowage for fans for cooling is prepared near this airstream outlet. in the aforementioned main part case The air duct of the shape of oblong [which is located between the aforementioned process unit and a fixing unit, and is prolonged in the passage direction of a form, and the crossing direction, and separates the arrangement section of the aforementioned substrate up and down], The septum which separates the flank of both the aforementioned units and the stowage for fans for cooling is prepared. The cooling system in the image formation equipment characterized by constituting so that it may emit outside the plane from the aforementioned airstream outlet through sideways opening and the aforementioned stowage for fans for cooling which were made to pass through the upper part of the aforementioned fixing unit, and drilled the air inhaled from the aforementioned airstream entrance in the aforementioned septum.

[Claim 2] The cooling system in the image formation equipment according to claim 1 with which the air inhaled from the airstream entrance formed in the rear face of the aforementioned main part case is characterized by preparing the circulation way which flows in the upper part and the lower part of the aforementioned process unit, respectively.

[Claim 3] The cooling system in the image-formation equipment according to claim 1 or 2 characterized by to constitute so that the dashboard into which the upper part of each aforementioned substrate and the lower part of the aforementioned process unit are divided may be formed in a main part case, the air inhaled from the airstream entrance of the rear face of the aforementioned main part case may form a ***** style path in the flat surface of each aforementioned substrate and it may emit outside the plane from the aforementioned airstream outlet through the aforementioned stowage for fans for cooling from this circulation way.

[Claim 4] The cooling system in the image formation equipment according to claim 3 characterized by constituting so that it may flow on the circulation way from the low voltage power supply section to which the air which prepared the bottom plate of a wrap sake and was inhaled from the airstream entrance of the rear face of the aforementioned main part case has arranged the lower part of the aforementioned main part case to the posterior part approach part within a main part case to the aforementioned substrate.

[Claim 5] The cooling system in the image formation equipment according to claim 1 to 4 characterized by being constituted so that the air inhaled from between the lower part of the aforementioned fixing unit and the notches formed in the front face of a main part case may be attracted inside an aeration duct through the inlet drilled in the front face of the aforementioned air duct.

[Claim 6] The cooling system in the image formation equipment according to claim 1 to 5 characterized by constituting the air which drilled the air hole in the rear face of the aforementioned aeration duct at the lower approach part, has arranged the diaphragm which divides the crevice between the front face of the aforementioned process unit, and the rear face of an aeration duct up and down in the upper part [air hole / this], and was inhaled from the airstream entrance of the rear face of the aforementioned main part case so that it may be drawn in inside an aeration duct.

[Claim 7] The cooling system in the image formation equipment according to claim 1 to 6 characterized by stretching the heat-reflecting plate for intercepting the radiant heat from a fixing unit in the front face of the aforementioned aeration duct.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the structure of the cooling system in image formation equipments, such as a copying machine, and facsimile or a LASER beam printer.

[0002]

[Description of the Prior Art] The drive motor which drives conventionally the rotation parts in the feed unit to which this kind of image formation equipment feeds the form for image formation, the process unit which builds in the developer which forms a toner image in a photo conductor drum or this, the exposure unit for forming an electrostatic latent image in a photo conductor drum, the fixing unit which carries out heating fixing of the toner image imprinted by the form, and these units and the transmission gearing, and the further are equipped with the power supply section for a control equipment.

[0003] And in order that it may be equipped with these units, a mechanical component, a power supply section, etc. in the product made from a metal plate, or the main part case made of synthetic resin and they may cool generation of heat from the fixing unit of the aforementioned power supply section, a drive motor, and a heating formula etc., the fan for cooling is stationed in the aforementioned main part case, the air for cooling is inhaled from the outside of a main part case from one airstream entrance, and it is made to emit outside the plane through the air discharge mouth of another side in the former

[0004]

[Problem(s) to be Solved by the Invention] However, since it becomes difficult to make the wind from one fan for cooling go in two or more directions when arranged in the position where two or more aforementioned heat sources are in the remote position within a main part case, and height crosses, You have to install the fan for cooling for every part near each heat source. especially the exhaust heat from the large fixing unit of a heating value Since it had to emit outside the plane by the individual fan for cooling, while the manufacturing cost increased, the space for stationing each fan for cooling was needed, and there was a problem that equipment was enlarged.

[0005] this invention is made that these problems should be solved and aims at offering the cooling system which can cool efficiently the heat source of two or more parts by one fan for cooling.

[0006]

[Means for Solving the Problem] In order to attain this purpose, the cooling system of the image formation equipment of invention indicated to the claim 1 The process unit which has the developer which forms a toner image in the photo conductor with which an electrostatic latent image is formed at least, and this photo conductor, In the image formation equipment which comes to hold the exposure unit for forming a latent image in a photo conductor, the fixing unit which carries out heating fixing of the toner image imprinted by the form, a power supply section, and various substrates in a main part case Even if there are few aforementioned main part cases, an airstream entrance is formed in an unilateral, an airstream outlet is formed in a side besides a main part case, and the stowage for fans for cooling is prepared near this airstream outlet. in the aforementioned main part case The air duct of the shape of oblong [which is located between the aforementioned process unit and a fixing unit, and is prolonged in the passage direction of a form, and the crossing direction, and separates the arrangement section of the aforementioned substrate up and down], The septum which separates the flank of both the aforementioned units and the stowage for fans for cooling is prepared. It constitutes so that it may emit outside the plane from the aforementioned airstream outlet through sideways opening and the aforementioned stowage for fans for cooling which were made to pass through the upper part of the aforementioned fixing unit, and drilled the air inhaled from the aforementioned airstream entrance in the aforementioned septum.

[0007] Moreover, invention indicated to the claim 2 prepares the circulation way where the air inhaled from the

airstream entrance formed in the rear face of the aforementioned main part case flows in the upper part and the lower part of the aforementioned process unit, respectively in the cooling system of the image formation equipment indicated to the claim 1. In a cooling system [in / image formation equipment according to claim 1 or 2 / in invention according to claim 3] in a main part case The dashboard into which the upper surface of each aforementioned substrate and the lower part of the aforementioned process unit are divided is formed. The air inhaled from the airstream entrance of the rear face of the aforementioned main part case forms a ***** style path in the flat surface of each aforementioned substrate, and through the aforementioned stowage for fans for cooling, it constitutes from this circulation way so that it may emit outside the plane from the aforementioned airstream outlet.

[0008] And in the cooling system in image formation equipment according to claim 3, invention according to claim 4 is constituted so that it may flow on the circulation way from the low voltage power supply section to which the air which prepared the bottom plate of a wrap sake and was inhaled from the airstream entrance of the rear face of the aforementioned main part case has arranged the lower part of the aforementioned main part case to the posterior part approach part within a main part case to the aforementioned substrate. Furthermore, in the cooling system in image formation equipment according to claim 1 to 4, invention according to claim 5 is constituted so that the air inhaled from between the lower part of the aforementioned fixing unit and the notches formed in the front face of a main part case may be attracted inside an aeration duct through the inlet drilled in the front face of the aforementioned air duct.

[0009] In a cooling system [in / image formation equipment according to claim 1 to 5 / in invention according to claim 6] in the rear face of the aforementioned aeration duct Drill an air hole in the lower approach part, and the diaphragm which divides the crevice between the front face of the aforementioned process unit and the rear face of an aeration duct up and down in the upper part [air hole / this] is arranged. The air inhaled from the airstream entrance of the rear face of the aforementioned main part case is constituted so that it may be drawn in inside an aeration duct.

[0010] Invention according to claim 7 stretches the heat-reflecting plate for intercepting the radiant heat from a fixing unit in the front face of the aforementioned aeration duct in the cooling system in image formation equipment according to claim 1 to 6.

[0011]

[Embodiments of the Invention] Next, the operation gestalt which materialized this invention to the printer of a laser-beam formula is explained based on a drawing. Drawing 1 is the perspective diagram of the printer as image formation equipment, and drawing 2 is the outline sectional side elevation of a LASER beam printer. As shown in drawing 1 and drawing 2 , a printer 1 The main part case 2 made of synthetic resin, The 1st medium tray unit 3 and the 2nd medium tray unit 4 which were prepared in the upper surface posterior part side of this main part case 2 free [attachment and detachment], The form conveyance mechanism 14 established in the main part case 2, and the scanner unit 20 as an exposure unit, Since a process unit 30, the fixing unit 50, the aforementioned form conveyance mechanism 14 and a process unit 30, and fixing unit 50 grade are driven, it consists of cooling systems later mentioned with an including-drive-motor and gear train drive unit (not shown).

[0012] Moreover, the covering structure 60 of having the wrap top covering 61 and the delivery tray 65 in which an aperture is ahead possible is established possible [opening and closing] in the upper part of the aforementioned fixing unit 50 and a process unit 30 on the upper surface of the main part case 2. It is the composition which can fold up and cover the delivery tray 65 at the upper surface side of the top covering 61 in not using it. The 1st medium tray unit 3 is equipped with the main part 5 of a tray, the tray covering 6 connected with this main part 5 of a tray possible [opening], the form support plate 7 supported pivotably free [rotation] by the main part 5 of a tray, the feed roller 8 which power transfer is carried out and rotates from the above-mentioned drive unit and separation pad 8a, and the energization spring 9 grade which energizes the soffit side of the form support plate 7 in the feed roller 8 direction. If the tray covering 6 is opened, according to a release mechanism (not shown), the form support plate 7 resists the energization force of the energization spring 9, moves in the direction of a bottom of the main part 5 of a tray, and will be in the state which can be set about a form on the form support plate 7.

[0013] Since the composition of the 2nd medium tray unit 4 is almost the same as that of the structure of the 1st medium tray unit 3 except for the tray covering 10, it attaches the sign same about the same composition, and the explanation is omitted. In addition, the manual paper feed of the form of a ***** sake can be inserted and carried out from interior of proposal 10a in the tray covering 10. The form conveyance mechanism 14 1st medium tray unit of the above 3 The sliding plate 15 which reaches and is extended in the direction of the upper part of the process-unit unit 30 from the soffit of the 2nd medium tray unit 4, It has 18 and 19. a feed roller pair -- 16, 17, and a resist roller pair -- the feed roller 8 and separation pad 8a separate one sheet at a time the nose-of-cam side of the form (not shown) set where a laminating is carried out to the form support plate 7 in the 2nd medium tray unit 4 -- having -- a resist roller pair, although conveyed by 18 and 19 After carrying out the resist of the nose of cam of a form in 18 and 19, it is conveyed in a process unit 30 through conveyance way 15b. the form from the 1st medium tray unit 3 -- a feed roller

pair -- conveyance way 15a of the upper surface of 16 and 17 to the sliding plate 15 -- passing -- a resist roller pair -- After the form which had the picture formed in a front face of a toner by this process unit 30 has a picture fixed with the heating roller 51 and the press roller 52 of the fixing unit 50, it is discharged by the delivery tray 65.

[0014] the oblong scanner drilled so that the scanner unit 20 as an exposure unit might arrange a laser light-emitting part, the polygon mirror 21, a lens 23, a reflecting mirror 22, and 24 grades to the inferior-surface-of-tongue side of the upper support plate 25 made of synthetic resin and it might be prolonged along with the axis of the photo conductor drum 32 in the above top support plate 25 -- the wrap glass plate 26 is passed for a hole, and it is constituted so that a laser beam may be irradiated and may be exposed to the peripheral face of the photo conductor drum 32 in a

[0015] As shown in drawing 2, the aforementioned process unit 30 The developer which has the developing roller 34 and the toner feed roller 36 which have been arranged to the upstream rather than the photo conductor drum 32 in the electrification machines 40, such as a scorotron type arranged under the photo conductor drum 32, and the imprint roller 33 which contacted the upper surface and the photo conductor drum 32, and the feed direction, It consists of the cleaning-roller 35 grade arranged to the downstream rather than the developer (toner) feed zone 37, i.e., a removable toner cartridge, furthermore arranged to the upstream, and the photo conductor drum 32. It is cartridge-ized by including in case 30a made of synthetic resin, and when the peripheral face of the photo conductor drum 32 scans a laser beam from the aforementioned scanner unit 20 in the electrification layer formed with the electrification vessel 40, an electrostatic latent image is formed. After the developer in the aforementioned toner cartridge 37 (toner) is stirred with an agitator body 38 and emitted, it is supported by the peripheral face of a developing roller 34 through a feed roller 36, and toner layer thickness is regulated by the blade 39. When the developer supplied from the developing roller 34 adheres, it develops the electrostatic latent image of the photo conductor drum 32, and it is imprinted by the form passing through between the imprint roller 32 and the photo conductor drums 32. And the toners which remained on the photo conductor drum 32 are collected by the cleaning roller 35.

[0016] Next, the composition of the main part case 2 and an air-cooled cooling system is explained further in full detail, referring to drawing 1 and drawing 3 - drawing 9. The main part case 2 The upper surface to the scanner unit 20, and a process unit 30, Respectively the fixing unit 50 Mainframe section 2a made of synthetic resin with which it can equip free [attachment and detachment], Dashboard 2b of the bottom of this mainframe section 2a, and the external surface of 4 rounds (order and right-and-left both sides) of mainframe section 2a Outside covering section 2made of wrap synthetic resin c, It becomes 2d of control-panel sections which project upward on the right-hand side of the aforementioned mainframe section 2a from receipt hollow 2e of the letter of lower opening for containing the drive unit which is not illustrated etc., and these are formed with injection molding etc. in one.

[0017] Drawing 3 is the outline plan of the main part case 2, and drawing 4 is the outline bottom view of the main part case 2. Outside covering section 2c is formed so that it may form successively by plane view on the outside of 4 rounds of mainframe section 2a of the shape of a simultaneously rectangle-like upper surface opening core box mostly located in a center section of the main part case 2. The 1st airstream entrance 70 and the 2nd airstream entrance 71 where the air for cooling is inhaled are drilled in the left lateral and posterior side of outside covering section 2c. The lower part of the 2d of the aforementioned control-panel sections is formed in the stowage 73 (refer to drawing 6) for cooling fans which contains a cooling fan 72 sideways, and the airstream outlet 74 is drilled in the side besides outside covering section 2c which confronts each other near this stowage 73 for cooling fans.

[0018] moreover, the edge of the air duct 76 of the shape of oblong [which is prolonged in the passage direction of a form, and the direction which intersects perpendicularly to the septum 75 from which mainframe section 2a and the aforementioned stowage 73 for cooling fans are separated (on the right-hand side of drawing 3)] -- forming successively -- a free passage -- it is made open for free passage so that air can circulate through a hole 77 Moreover, two or more sideways openings 78 which are open for free passage to mainframe section 2a and the aforementioned stowage 73 for cooling fans are drilled by the aforementioned septum 75 (refer to drawing 6).

[0019] With the aforementioned scanner unit 20, to the upper part a process unit 30 It arranges in the plane view simultaneously center section of mainframe section 2a of the shape of an upper surface opening box in the main part case 2. Upper surface Itabe 76a of the air duct 76 of the shape of oblong [aforementioned] is formed in the shape of [of cross-section facing down] abbreviation for V characters (refer to drawing 3 and drawing 5). It is located between the process units 30 and the fixing units 50 which face-plate section 76a besides arranges to the upper surface side of mainframe section 2a. The radiant heat from the heating roller 51 which can be set fixing unit 50 is directly transmitted to a process-unit 30 side (refer to drawing 2, drawing 3, drawing 5, and drawing 8). In addition, as shown in drawing 5 and drawing 8, between the soffits of upper surface Itabe 76a of the letter of the cross-section facing-down abbreviation for V characters are formed successively by the dashboard 91, and the part surrounded by these members serves as an air duct 76, and it is constituted so that a cooling wind may pass through the interior in the direction of an arrow shown in drawing 6 through the run through-hole 77.

[0020] In addition, the oblong-like notch 88 is suitably formed in the front face of the main part case 2 for the halfway section of the width of face of the right-and-left both-sides straight side covering length (refer to drawing 6 and drawing 8). The air attracted from the front face of the main part case 2 passes the lower part of the aforementioned fixing unit 50, and it is constituted so that it may be drawn in inside the aeration duct 76 through two or more inlets 89 drilled in the front face of upper surface **** 76a in the aforementioned air duct 76.

[0021] Furthermore, in the front face (side which stands face to face against the rear face of the fixing unit 50) of the aforementioned upper surface **** 76a, the area of most except two or more aforementioned inlets 89 is stretched so that it may cover by the heat-reflecting plates 90, such as aluminum foil, (refer to drawing 6 , drawing 8 , and drawing 9). and in the rear face of upper surface **** 76a of the aforementioned aeration duct 76 Drill an air hole 92 in the lower approach part, and the diaphragm 93 of the shape of oblong [of the sponge which divides the crevice between the front face of the aforementioned process unit 30 and the rear face of the aeration duct 76 up and down in the upper part / air hole / this / 92] / is arranged. It is constituted so that the inhaled air may be attracted inside the aeration duct 76 through the lower part (crevice between the upper surfaces of the scanner unit 20) of a process unit 30 from the 2nd airstream entrance 71 of the rear face of the aforementioned main part case 2.

[0022] From dashboard section 2b of the aforementioned mainframe section 2a in the main part case 2, moreover, below To the right-hand side rear approach part of the bottom view of the main part case 2 shown by drawing 4 , the low voltage power supply substrate 80 as a low voltage power supply section To the left-hand side rear approach part of the aforementioned bottom view, the main substrate 81 for control again To the left-hand side center-section approach part of the aforementioned bottom view, are arranged the relay substrate 82, and the high-voltage-power-supply substrate 83 is further arranged, respectively to the pre-approach part (almost lower part position [Air duct 76]) of the aforementioned bottom view. Each of these substrates 80, 81, 82, and 83 are fixed to the stay section 84 which protruded downward in one from aforementioned dashboard section 2b etc. on a screw etc. (refer to drawing 5 - drawing 7), and the proper airstream path is formed between dashboard section 2b and the upper surface of each substrates 80, 81, 82, and 83.

[0023] And the air hole 86 is drilled in the posterior wall of stomach 85 started from the posterior part of the aforementioned dashboard section 2b to the upper part (refer to drawing 5). Furthermore, a crevice is suitably opened in the soffit of the main part case 2 with the inferior surface of tongue of each aforementioned substrates 80, 81, 82, and 83, and the bottom plates 87, such as metal, are being fixed to it on the screw (refer to drawing 5 - drawing 7). Next, the cooling operation by the air cooling cooling system by the aforementioned composition is explained. If the power supply of a printer 1 is turned on, an electric power supply is carried out to each substrates 80, 81, 82, and 83, voltage impression will be carried out and preheating will be carried out to the heater section of the heating roller 51 in the fixing unit 50. Almost simultaneously with this, a cooling fan 72 drives.

[0024] Thereby, first, as the arrow A of drawing 3 and drawing 6 shows, the air inhaled from the 1st airstream entrance 70 of the left lateral of covering-above outside section 2c takes the heat which passes through the upper part of the fixing unit 50 mostly, and is generated from the oblong fixing unit 50, and air circulates so that it may discharge from the sideways opening 78 to the right-hand side airstream outlet 74 through the inside of the stowage 73 for cooling fans. If it puts in another way, since the 1st airstream entrance 70, the fixing unit 50, the sideways opening 78, the cooling fan 72, and the airstream outlet 74 are located in a line in the shape of about 1 straight line, the flow of air becomes very smooth and the cooling effect of the fixing unit 50 improves.

[0025] Moreover, the air inhaled from the aforementioned 2nd airstream entrance 71 which carried out opening to the rear face of the main part case 2 As the arrow B of drawing 3 and drawing 5 shows, the air which passed the vertical part of a process unit 30 through the aforementioned air hole 86 in the upper part of dashboard section 2b, and passed the upper part of a process unit 30 It is discharged from the cooling fan 72 in the stowage 73 for cooling fans in the part of the aforementioned airstream outlet 74 toward the sideways opening 78 of the unilateral (right-hand side of drawing 3) position of the process unit 30 concerned. Therefore, since the airstream which flows in the aforementioned arrow A direction, and the airstream of the direction of arrow B do not collide in the part of most in mainframe section 2a and it is drawn in by the sideways opening 78, the heat generated from the fixing unit 50 can heighten the cooling effect in the state where it does not have a bad influence on a process unit 30.

[0026] in addition, as shown in drawing 5 and drawing 8 , airstream B' which passed the lower part of a process unit 30 has the passage to the upper part prevented by the diaphragm 93 in the rear-face part of upper surface **** 76a of the aforementioned aeration duct 76, and is attracted in the aeration duct 76 from an air hole 92 -- having (referring to drawing 8) -- a free passage -- it is discharged from the cooling fan 72 in the stowage 73 for cooling fans through a hole 77 in the part of the aforementioned airstream outlet 74 (refer to drawing 6)

[0027] On the other hand, in the front-face side of the main part case 2, since the air attracted from the aforementioned notch 88 shown in drawing 8 serves as the airstream D which passes through the crevice on the upper surface of

dashboard 2b by the undersurface side of the fixing unit 50 and is attracted in the aeration duct 76 through the inlet 89 of the front part of upper surface **** 76a, its cooling effect improves conjointly with the adiabatic efficiency of the radiant heat which comes out of the fixing unit 50 by this upper surface **** 76a.

[0028] Furthermore, the screening effect of the radiant heat by the heat-reflecting plate 90 stretched in the front part of upper surface **** 76a improves further. The air inhaled from the aforementioned 2nd airstream entrance 71 which carried out opening to the rear face of the main part case 2 As the arrow C of drawing 5 shows, it passes through the circulation way by the side of the undersurface of dashboard 2b. In accordance with the letter of abbreviation parallel, it passes to each vertical side of the low voltage power supply substrate 80 as a power supply section, the main substrate 81, the relay substrate 82, and the high-voltage-power-supply substrate 83, and is discharged outside the plane through a cooling fan 72 and the airstream outlet 74 from the undersurface in the stowage 73 for cooling fans. Therefore, substrates, such as a power supply section, are separated from each units 20, 30, and 50 of an upper part position in dashboard 2b, and they can be certainly cooled at the cooling air which passes through the circulation way by the side of the undersurface of dashboard 2b while they do not receive the bad influence of the heat which comes out of each unit.

[0029] Furthermore, since the main part case 2 is unified in synthetic-resin material in mainframe section 2a, and 2d of outside covering section 2c dashboards etc. and the aeration duct 76, assembly operation is easy, and there are also few required part mark, it ends, and a manufacturing cost can be reduced.

[0030] [Effect of the Invention] As explained above, the cooling system of the image formation equipment of invention indicated to the claim 1 The process unit which has the developer which forms a toner image in the photo conductor with which an electrostatic latent image is formed at least, and this photo conductor, In the image formation equipment which comes to hold the exposure unit for forming a latent image in a photo conductor, the fixing unit which carries out heating fixing of the toner image imprinted by the form, a power supply section, and various substrates in a main part case Even if there are few aforementioned main part cases, an airstream entrance is formed in an unilateral, an airstream outlet is formed in a side besides a main part case, and the stowage for fans for cooling is prepared near this airstream outlet. in the aforementioned main part case The air duct of the shape of oblong [which is located between the aforementioned process unit and a fixing unit, and is prolonged in the passage direction of a form, and the crossing direction, and separates the arrangement section of the aforementioned substrate up and down], The septum which separates the flank of both the aforementioned units and the stowage for fans for cooling is prepared. It constitutes so that it may emit outside the plane from the aforementioned airstream outlet through sideways opening and the aforementioned stowage for fans for cooling which were made to pass through the upper part of the aforementioned fixing unit, and drilled the air inhaled from the aforementioned airstream entrance in the aforementioned septum.

[0031] Therefore, the thing for which between the fixing unit which generates many heat, and the process units which are easy to receive the bad influence of the heat was separated by the aeration duct, By the cooling effect emitted outside the plane from the aforementioned airstream outlet through sideways opening and the aforementioned stowage for fans for cooling which were made to pass through the upper part of the aforementioned fixing unit in the shape of about 1 straight line, and drilled the air inhaled from the aforementioned airstream entrance established in the unilateral of a main part case in the aforementioned septum Hot air does not collect in a main part case, but it can avoid having a bad influence on a process unit.

[0032] Moreover, invention indicated to the claim 2 prepares the circulation way where the air inhaled from the airstream entrance formed in the rear face of the aforementioned main part case flows in the upper part and the lower part of the aforementioned process unit, respectively in the cooling system of the image formation equipment indicated to the claim 1. Therefore, since the airstream which flows along with the longitudinal direction of the aforementioned fixing unit, and the airstream which flows the vertical section of a process unit do not collide in the part of most within a main part case and it is drawn in by sideways opening, the heat generated from a fixing unit can heighten the cooling effect in the state where it does not have a bad influence on a process unit.

[0033] And while being able to perform efficiently cooling of the heat source of the part where the positions mutually left with one cooling fan differ, the effect that the installation number of a cooling fan is lessened and a manufacturing cost can also be reduced is done so. In a cooling system [in / image formation equipment according to claim 1 or 2 / in invention according to claim 3] in a main part case The dashboard into which the upper surface of each aforementioned substrate and the lower part of the aforementioned process unit are divided is formed. The air inhaled from the airstream entrance of the rear face of the aforementioned main part case forms a ***** style path in the flat surface of each aforementioned substrate, and through the aforementioned stowage for fans for cooling, it constitutes from this circulation way so that it may emit outside the plane from the aforementioned airstream outlet.

[0034] Therefore, a power supply section and a substrate are separated from each unit of an upper part position in a

dashboard, and they can be certainly cooled at the cooling air which passes through the circulation way by the side of the undersurface of a dashboard while they do not receive the bad influence of the heat which comes out of each unit. And invention according to claim 4 is set to the cooling system in image formation equipment according to claim 3. The air which prepared the bottom plate of a wrap sake and was inhaled from the airstream entrance of the rear face of the aforementioned main part case the lower part of the aforementioned main part case Since it constitutes so that it may flow on the circulation way from the low voltage power supply section arranged to the rear approach part within a main part case to the aforementioned substrate, and the undersurface side of a main part case is closed in the bottom plate, it becomes certain forming [of an airstream path] it.

[0035] Furthermore, in the cooling system in image formation equipment according to claim 1 to 4, invention according to claim 5 is constituted so that the air inhaled from between the lower part of the aforementioned fixing unit and the notches formed in the front face of a main part case may be attracted inside an aeration duct through the inlet drilled in the front face of the aforementioned air duct.

[0036] Therefore, since the air attracted from the aforementioned notch serves as the airstream which passes through the crevice on the upper surface of a dashboard by the undersurface side of a fixing unit and is attracted in an aeration duct through the inlet of the front part of an aeration duct, in the front-face side of a main part case, it does so the effect that the cooling effect improves conjointly with the adiabatic efficiency of the radiant heat which comes out of the fixing unit by this aeration duct.

[0037] In a cooling system [in / image formation equipment according to claim 1 to 5 / in invention according to claim 6] in the rear face of the aforementioned aeration duct Drill an air hole in the lower approach part, and the diaphragm which divides the crevice between the front face of the aforementioned process unit and the rear face of an aeration duct up and down in the upper part [air hole / this] is arranged. The air inhaled from the airstream entrance of the rear face of the aforementioned main part case is constituted so that it may be drawn in inside an aeration duct.

[0038] Therefore, the airstream which has passed through the upper surface of a process unit, and the airstream which has passed the bottom do not join near the fixing unit part which becomes near the high temperature generation source, but an air distribution channel is tidied up, and the effect that the cooling effect improves is done so. Invention according to claim 7 stretches the heat-reflecting plate for intercepting the radiant heat from a fixing unit in the front face of the aforementioned aeration duct in the cooling system in image formation equipment according to claim 1 to 6. Therefore, the radiant heat from a fixing unit does so the effect that heat transfer to the direction of a process unit can prevent certainly conjointly with existence of the aforementioned aeration duct.

[Translation done.]

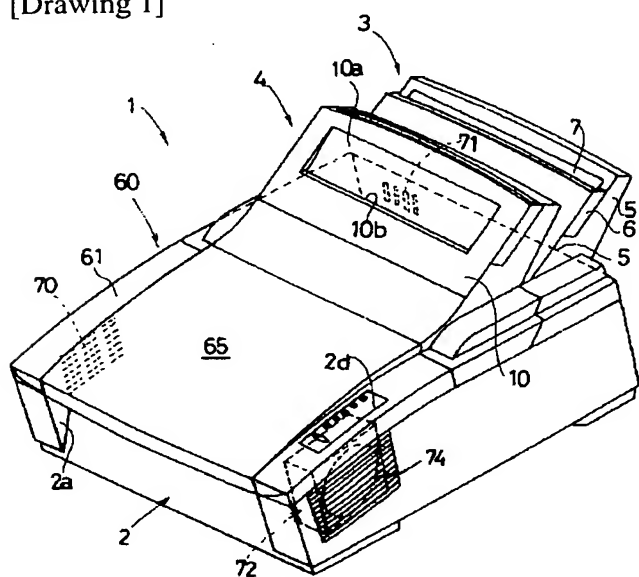
* NOTICES *

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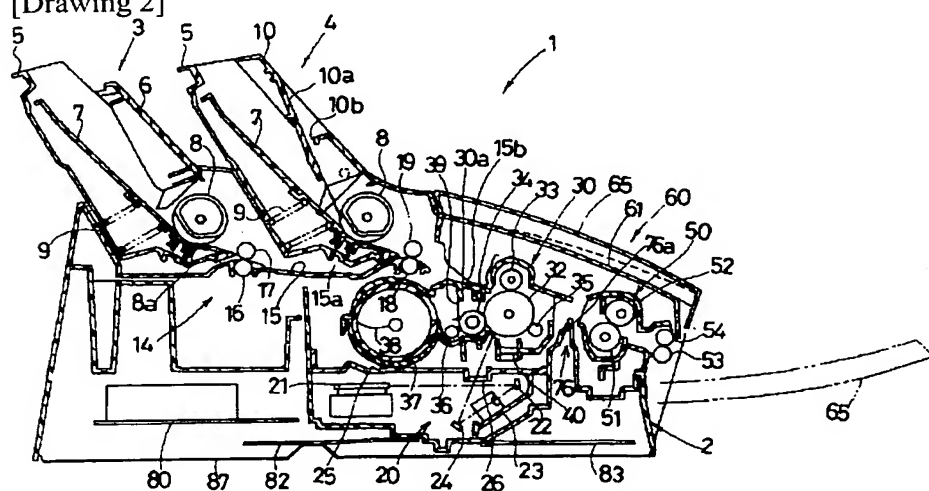
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

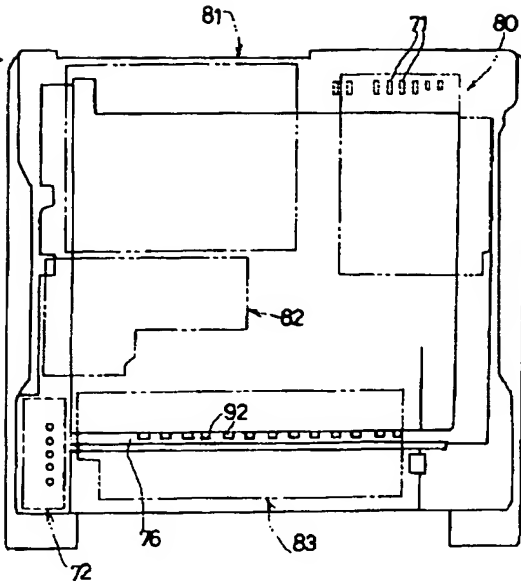
[Drawing 1]



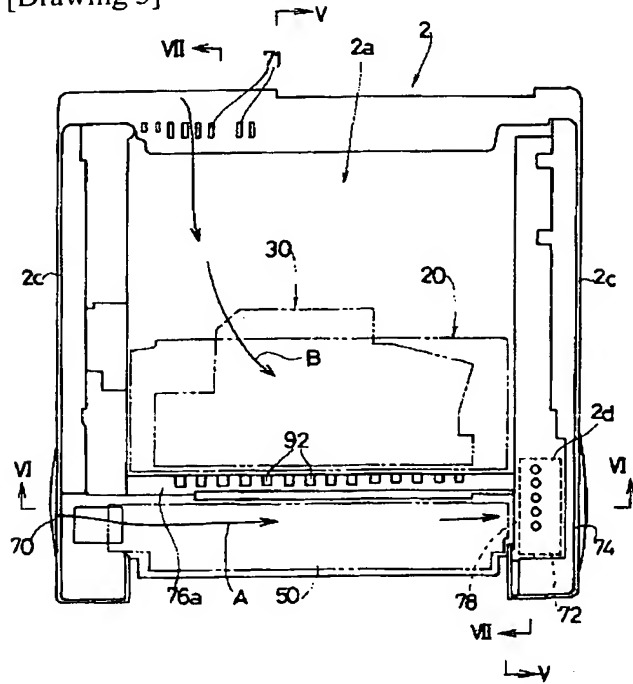
[Drawing 2]



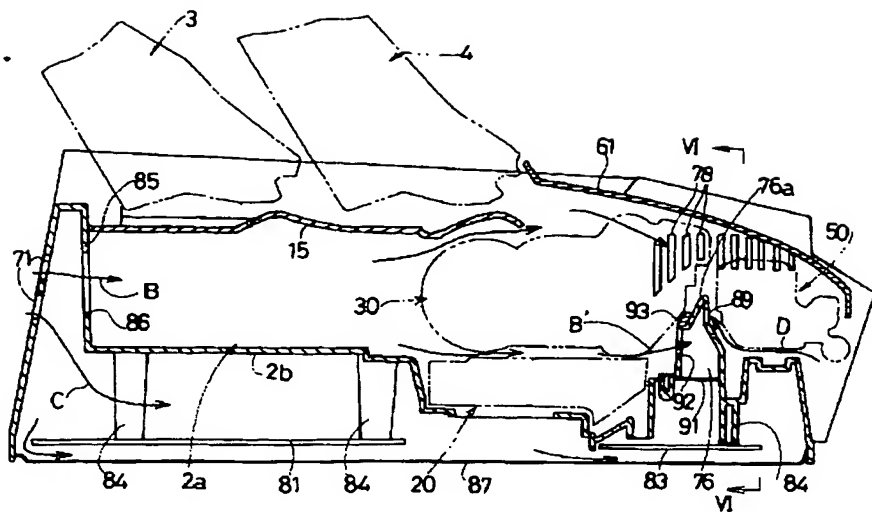
[Drawing 4]



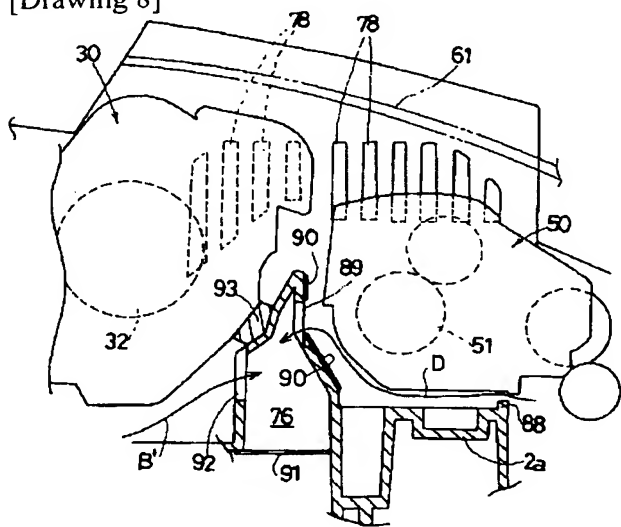
[Drawing 3]



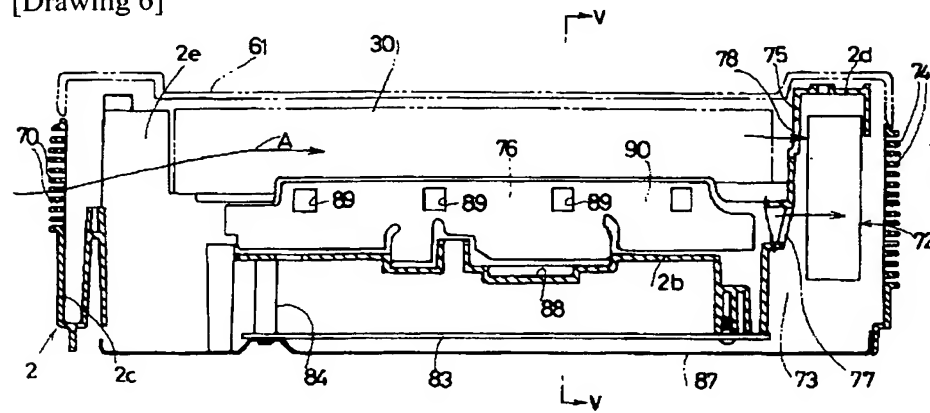
[Drawing 5]



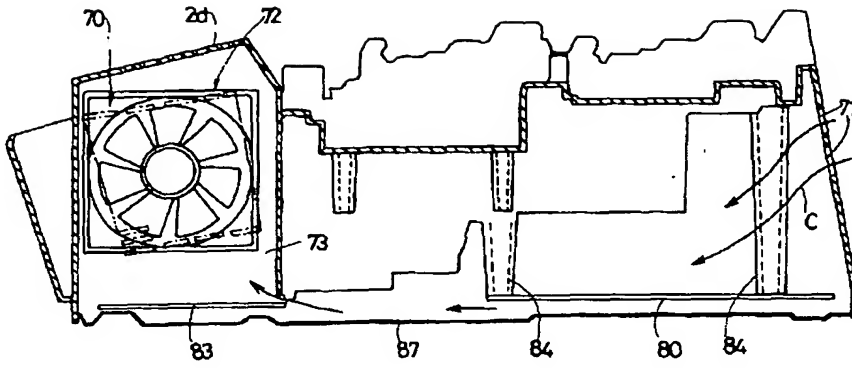
[Drawing 8]



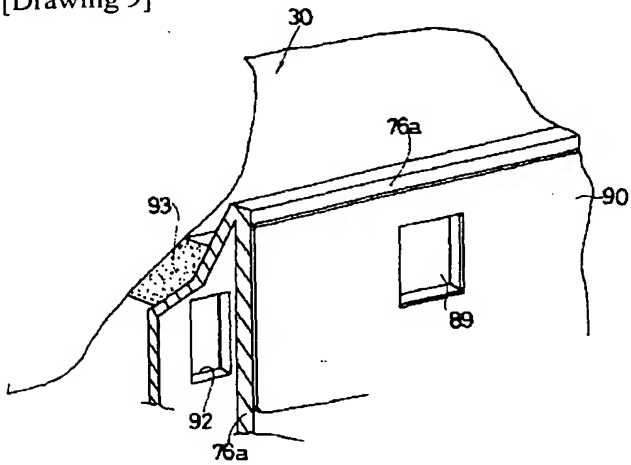
[Drawing 6]



[Drawing 7]



[Drawing 9]



[Translation done.]